EDUCATION

Utah Preparing Students Today for a Rewarding Tomorrow (UPSTART) Report

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Utah Preparing Students Today for a Rewarding Tomorrow (UPSTART) Report

EXECUTIVE SUMMARY

During the 2019-2020 school year, Cohort 11 participated in the Utah Preparing Students Today for a Rewarding Tomorrow (UPSTART) program. The UPSTART program uses a home-based educational technology approach to develop the school readiness of preschool children. The program is designed to give Utah four-year-olds an individualized reading, mathematics, and science curriculum with a focus on reading. Children participate in the program the year before they attend kindergarten. The UPSTART program is administered by the Waterford Institute. A total of 15,125 preschool students participated in Year 11 of the program. Students in Cohort 11 used the UPSTART program for an average of 46 hours during the program year. Students who were UPSTART graduates used the program for an average of 53 hours. Children who did not graduate from the UPSTART program were more likely to be a member of an underrepresented racial or ethnic minority group, have parents with lower levels of education, reside in families with parents who were not married, and have higher levels of poverty in comparison to children who did graduate. The independent evaluation for Cohort 11 of the program is attached.

UPSTART Program Evaluation

Year 11 Implementation Results

Submitted to the Utah State Board of Education
October 2020

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ADA Compliant: 7/14/2022

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Executive Summary

The Waterford Institute recognizes that nearly half of our country's 4-years-olds face socioeconomic barriers that keep them from early education. Utah Preparing Students Today for a Rewarding Tomorrow (UPSTART) is a home-based computer preschool program developed and provided by Waterford to prepare young children for school entry and future academic success. The program offers in-home, early education access to families who are unserved and often lower income by providing support, technology, and internet where needed. The Evaluation and Training Institute (ETI), has prepared this report for the Utah State Board of Education (USBE) to document UPSTART's eleventh year of implementation with students enrolled during the 2019-2020 program year. Due to the spring 2020 onset of the corona virus, which resulted in statewide social distancing, shelter in place rules and the suspension of year-end state Preschool Exit Exam Profile testing, ETI (in partnership with the UPSTART Advisory Committee) amended the annual evaluation design to present results for program implementation only[1].

Over the past eleven years, program enrollment has continually increased, reaching families in urban and rural areas throughout the state of Utah. The 2019-20 program year was no exception with Year 11 students comprising 15,125 preschoolers, up slightly from the previous year's 14,125. This year's cohort of children also marks the first year of implementing and examining three different tiers of program support for families: Tier 1, UPSTART software only; Tier 2, UPSTART with digital communication for parents to receive text-message program support; Tier 3, UPSTART with full implementation support.

A summary of Cohort 11's implementation results are below:

- Beginning in the 2019-2020 program year, the graduation requirement was raised from 16.67 total hours to 25 hours. With this new criterion, 80% of the students in Cohort 11 successfully graduated from the program.
- Students in Cohort 11 used the UPSTART program for an average of 46 hours during the program year. Students who were UPSTART graduates used the program for an average of 53 hours.
- As seen in previous years, children who did not graduate were more likely to have parents with lower levels of education, be members of an underrepresented racial or minority group, have parents who were not married, and have higher levels of household poverty than children who graduated and completed the UPSTART program.

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[1] Without the administration of state-wide testing, a control group of children could not be established for matched comparison to the 2019-2020 UPSTART cohort, therefore program impact results were not possible in the current evaluation year.

- Thirty-two percent of children enrolled in UPSTART Cohort 11 were from families with incomes less than 185% of the federal poverty level. The majority of enrolled children were White (81%) and English speaking (97%).
- An exploratory analysis revealed that a tier system of support yielded different usage practices by families, with time spent and graduation rates notably higher among families with the Tier 3 level of support (the most comprehensive of the 3 options).

Recommendations

As noted, each program year, it continues to be important to find strategies for engaging the most at-risk populations of children. While UPSTART is making great strides in reaching the states most vulnerable learners, there remains a need to counteract the risk factors that contribute to lower graduation rates and subpar program usage.

Unique to this year, the data on the different Tier levels suggest that full implementation support (Tier 3) is most optimal for influencing successful usage and completion of the program. The additional communication structure and program resources offer clear benefits to participating families and result in more actively engaged children.

The implementation results for this cohort of children should be weighed in the context of the global pandemic that forced schools in Utah to close as a precaution in March 2020.

Introduction

The Utah State Board of Education (USBE) hired the Evaluation and Training Institute (ETI), a non-profit research and consulting firm, to conduct a multi-year evaluation of the UPSTART program. The evaluation had two primary goals: to study how the program was implemented and to study the program's impact on preschool learning outcomes. A health pandemic spread across the United States in spring 2020, resulting in social distancing and shelter in place rules to protect adults and children in Utah from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; the "corona virus"). The health and safety guidelines along with early school closures prevented the state from collecting Pre-Kindergarten Entrance and Exit Profile (PEEP) data and transferring it to the evaluators. Without PEEP data on learning outcomes we could not conduct the learning outcomes analysis. ETI (in partnership with the USBE and UPSTART Advisory Committee) revised the Cohort 11 (C11) evaluation to present results for program implementation only.

The **C11 evaluation**, therefore, had several main objectives:
- Document the extent to which participants used the computerized curriculum as it was intended
- Report the program's completion or "graduation" rate, and
- Explore the relationship between the support Tier selected and curriculum usage

UPSTART Program Description

Utah Preparing Students Today for a Rewarding Tomorrow (UPSTART) is a project established by the Utah state legislature that uses a home-based education technology approach to develop the school readiness skills of preschool children. In its eleventh year of operation during the 2019-20 school year, the project's implementation contractor – the Waterford Institute – enrolled 15,125 preschool children and provided them with an adaptive program of computer-based early literacy instruction to prepare them academically for kindergarten. The 15,125 children enrolled in the C11, participated in UPSTART from September 2019 through May 2020.

The UPSTART software used adaptive lessons, digital books, animated songs, and activities to deliver individualized early literacy content. The reading skills taught by the Waterford Early Learning Program at Level 1 of the curriculum[2] include:

- Phonological Awareness
- Phonics
- Comprehension and Vocabulary
- Language Concepts

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[2] Level One is the beginning point of the curriculum where the preschool child begins as a nonreader and is introduced to skills designed to teach the child to read.

Children were encouraged to use the UPSTART program for 15 minutes a day, 5 days a week, and depending on tier selection, families were provided with parental resources and technical support from Waterford customer service representatives.

Method Summary

Research Questions

The original research questions were modified for Cohort 11 to focus strictly on the implementation results of the UPSTART program and a descriptive analysis of the differences between program support Tiers.

> **Research Question 1.1:** What was the extent of UPSTART curriculum usage as measured in minutes or hours of instruction per week?

> **Research Question 1.2:** What percent of the participants completed the full implementation program (i.e., "graduated" as defined by the Waterford Institute)?

> **Research Question 1.3:** What differences were observed among families choosing between three newly created support tiers?
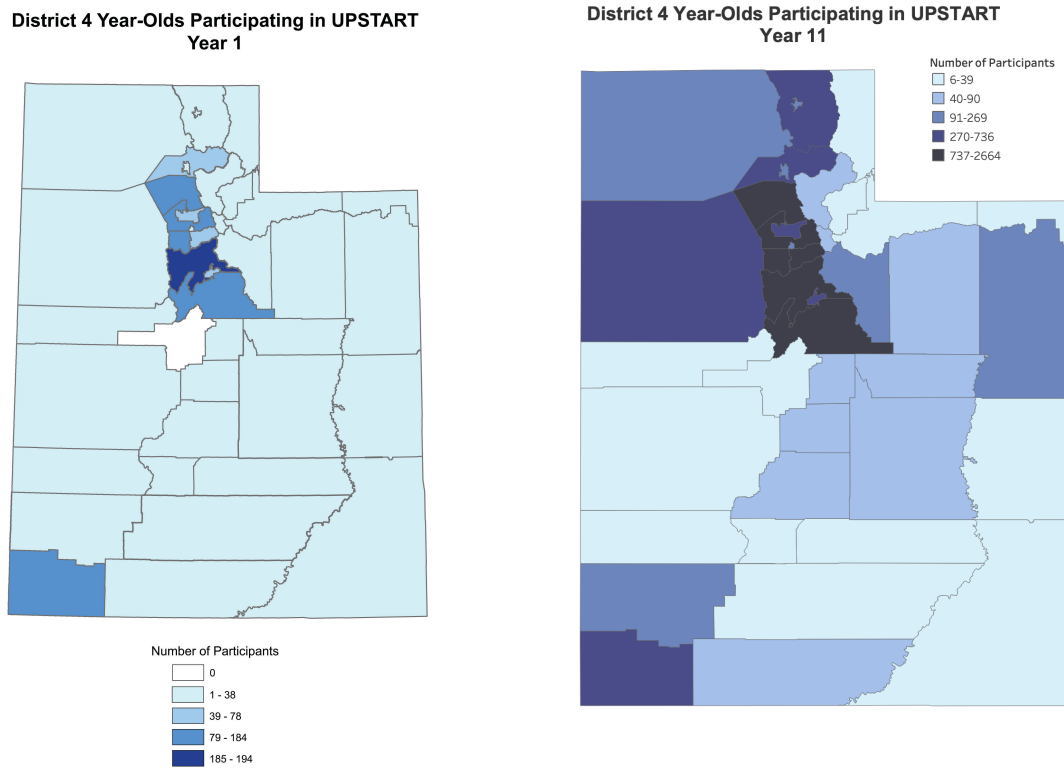
Data Collection

To evaluate the implementation of the UPSTART program, data were obtained from records shared by the Waterford Institute for children who had enrolled in the 2019-2020 program year. The records provided data across all usage variables including average weekly use, average number of days per week, average session duration, and overall average total time with the program. Waterford provided program graduation data indicating whether or not the child successfully met the graduation requirements of the program. Data included information about the type of equipment provided to the family by UPSTART as well as the tier-level of support selected. Through the program registration process, parents additionally provided demographic information about the child and household. These datasets were analyzed by ETI to generate the findings related to program implementation.

Program Implementation

UPSTART Enrollment

Continuing the trend in enrollment growth since the inception of the program, the 2019-20 program year enrolled 15,125 preschoolers into C11, up slightly from the previous year's cohort (N = 14,125). The maps depicted in **Figure 1** illustrate the expansion of the UPSTART program's participation by school district from (Year 1, N=1,248) to the most recent Year 11 (N=15,125). The UPSTART program has extended its reach over the past eleven years and has increased enrollment in both urban and rural areas of the state.

Figure 1. Maps of UPSTART Program Participation in Year 1 and Year 11 by School District

District 4 Year-Olds Participating in UPSTART Year 1

District 4 Year-Olds Participating in UPSTART Year 11

Number of Participants
- 6-39
- 40-90
- 91-269
- 270-736
- 737-2664

Number of Participants
- 0
- 1 - 38
- 39 - 78
- 79 - 184
- 185 - 194

The demographic makeup of C11 is similar to previous program years, 50% of the preschoolers are male and 50% are female. The vast majority of the cohort is White (80%) with 10% from Hispanic origin. Thirty two percent of the C11 UPSTART families have incomes less than 185% of the federal poverty level.[3]   Additional demographic characteristics of the C11 population are presented below in **Table 1**.

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[3] The federal poverty definition consists of a series of thresholds based on family size. In 2018, a 100% poverty threshold for a family of four was $25,100, while a 185% threshold for a family of four was $46,435 (see U.S. Department of Health and Human Services poverty guidelines at https://aspe.hhs.gov/2018-poverty-guidelines).

Table 1. Demographic Characteristics of C11 Population

Demographic Categories		All C11 UPSTART (N=15,125)
Child's Gender	Male	50%
	Female	50%
Child's Ethnicity	White	81%
	Hispanic	10%
	Asian/Pacific Islander	3%
	African American	2%
	Native American	<1%
	Other	4%
Child's Language	English	97%
	Spanish	3%
	Other	<1%
Parent Educational Attainment	Some High School	2%
	High School Graduate	9%
	Some College	31%
	College Graduate	40%
	Advanced Degree	10%
Parent Marital Status	Married	85%
	Otherwise	15%
Household Poverty Level	Below 100%	7%
	Below 185%	32%
	Below 200%	33%

Note: Percentages may not add to 100% due to rounding. Data is from Waterford participant records.

UPSTART Equipment

The type of education technology provided in Year 11 is shown in **Figure 2** for all 15,125 children enrolled in the program.

Figure 2. Equipment Provided to C11 Participants by Waterford

WEL Web — 82%
Computer — 9%
Computer & Internet — 2%
Computer & Cellular — 1%
Internet & WEL Web — 1%
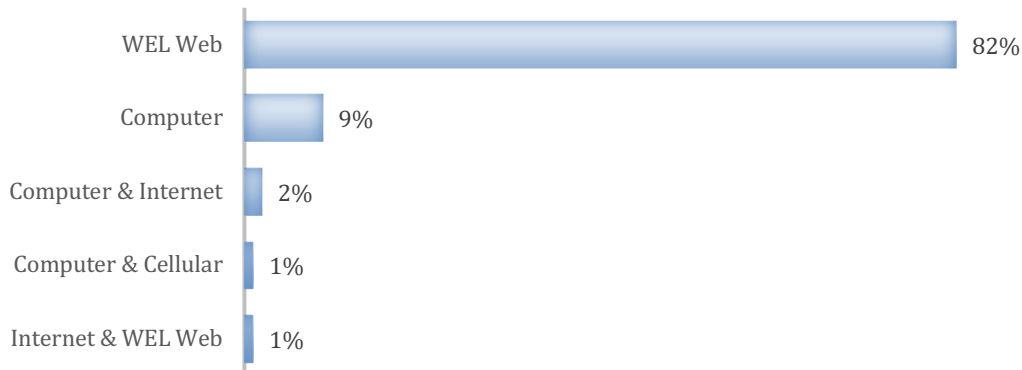
*Note: Percentages may not add to 100% due to rounding.

The majority of children (82%) used the Waterford website to access the UPSTART curriculum from their home computers. UPSTART provided free personal computers to 9% of the C11 children and another 2% of participants were provided with internet access and personal computers. The remaining enrollees received computers and wireless access (1%), internet and access to the Waterford website (less than 1%) or participated in a lending library program (less than 1%) to enable them to access the UPSTART curriculum.

UPSTART Usage

The C11 academic year covered 39 weeks of instruction, beginning the week of September 2, 2019 and ending May 25, 2020. Program usage data were analyzed to understand the extent to which families were using the program and meeting requirements for graduation. For enrolled families the average duration in the program was approximately 36 weeks. The Waterford recommended total usage criteria was 1500 minutes (or 25 hours) across the entirety of the program. The average level of usage for all students enrolled (N=15,125) was approximately 46 hours of instruction, down marginally from last year but still well above the recommended dosage. When looking at the average level of usage strictly among those who met the graduation requirement (i.e. 1500 total minutes), total hours increase to approximately 53. The average total hours of instruction observed for Year 11 are summarized in **Table 2**.

Table 2. C11 Hours of UPSTART Instruction

Group	N	Mean	SD	Range
All UPSTART	15,125	46.43	16.61	00.03 – 142.00
UPSTART Graduates	12,073	52.58	11.21	25.00 – 142.00

Figure 3 shows the distribution of hours of instruction for the total C11 population (N=15,125). As illustrated, the majority of children exceeded the program's minimum requirement of 25 hours, yet roughly twenty percent logged less than the recommended criteria for program completion.

Figure 3. Distribution of Hours of Instruction for C11 Families

HOURS OF INSTRUCTION
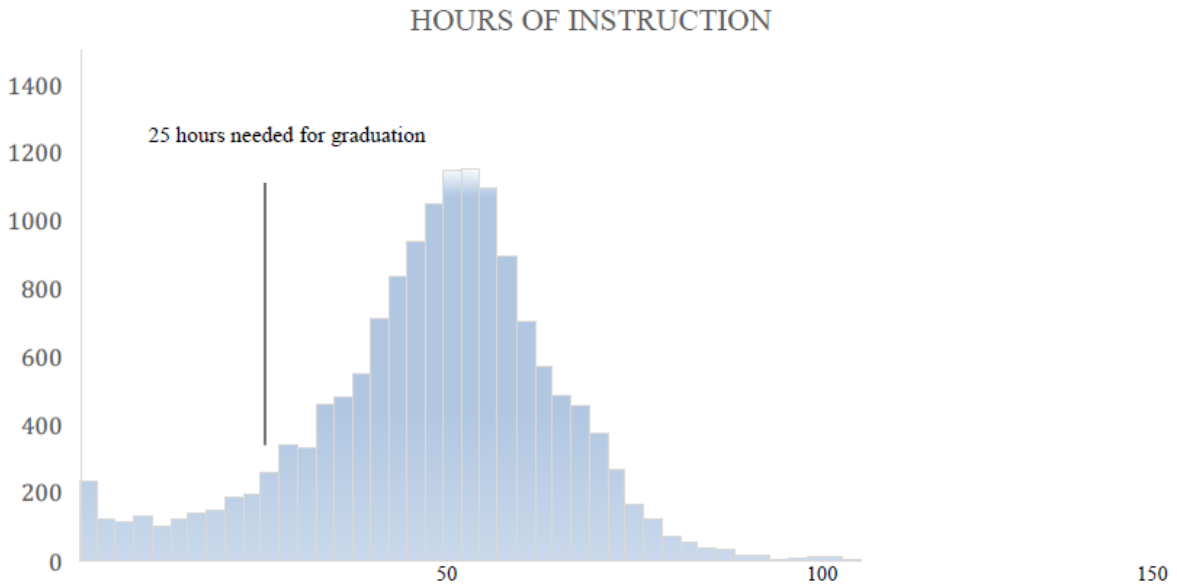
The bottom quartile of the C11 population completed 37.91 hours of instruction or less, the midpoint of the C11 distribution was 48.29 hours, and the top quartile completed 56.63 hours or more of instruction.

In examining the trend of hours across the duration of the program, patterns in usage were similar to prior years with the exception of a few fluctuations in Spring when the coronavirus shut schools and businesses down (see **Figure 4**). While stay at home orders did not negatively impact children's ability to log UPSTART hours, there was a notable drop once lockdown orders in Utah were lifted.

Figure 4. Average Weekly Minutes of Program Use

2019-2020 UPSTART WEEKLY AVERAGE USAGE
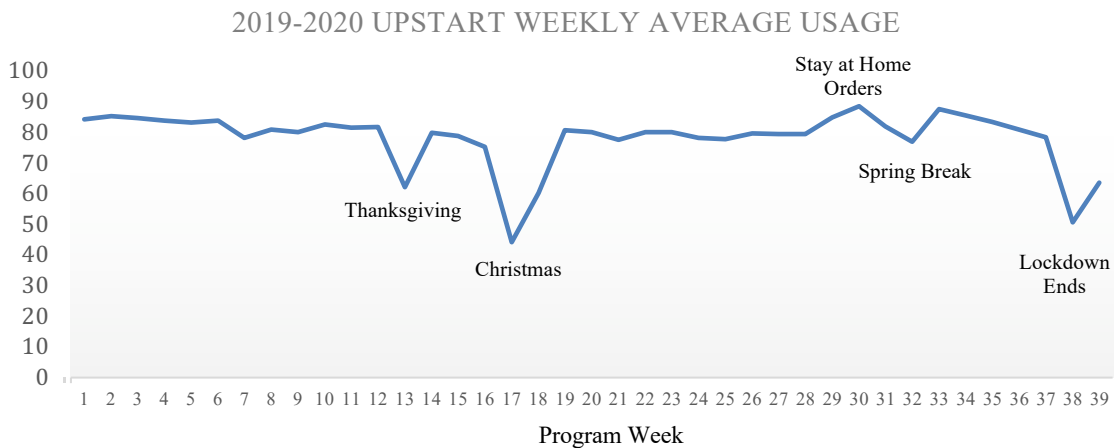
UPSTART Graduation Rate

Prior ETI evaluation studies have shown that successful usage and hence graduation from the program are strongly associated with helping children develop key early literacy skills. That is, previous evaluation years have shown that curriculum usage is significantly and positively related to literacy outcomes as measured by early literacy instruments. Because children's early skill development serves as a powerful predictor for their future academic success, measuring the extent to which participants meet the graduation threshold provides important information about the program's ability to impact future outcomes.

Waterford recognized that to optimize these positive impacts, children needed more time with the program. For this reason, Waterford's 2019-2020 graduation criteria changed by increasing the total minimum hours required. The graduation requirement now involves (a) logging at least 1,500 minutes (25 hours of instruction) with the UPSTART curriculum and (b) averaging at least one hour of instruction per week while participating in the program. Of the 15,125 children enrolled in Year 11, the Waterford Institute classified 12,073 as children who had met the program's usage criteria and therefore graduates of the program.

Cohort 11 achieved a graduation rate of 80% (i.e., 12,073/15,125 = 0.80), which is the third lowest on record since its first year of implementation. This downward graduation trend is shown in **Figure 5**; however, it is important to remember that Year 11 has a higher usage threshold for calculating program graduate status than Years 1-10. Using the previous graduation usage criteria of 16.67 hours, a declining pattern of graduation rates is still evident[4].

Figure 5. Graduation Rates and Program Enrollment Over Time

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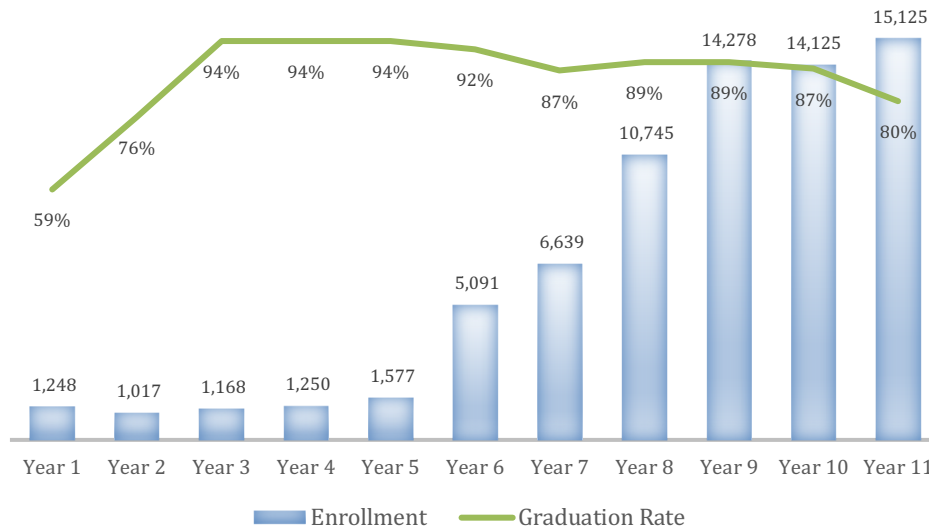
[4] Year 11's graduation rate is based on a new minimum usage requirement of 25 hours (up from the previous year at 16.67). If calculated with last year's threshold, the graduation rate is approximately 81%.

In order to further understand the differences in program graduates and non-graduates, **Table 3** displays the demographic characteristics of these two groups within Cohort 11. Children who did not meet the program usage requirement were more likely than UPSTART graduates to be a member of an underrepresented racial or ethnic minority group, have parents with lower levels of education, reside in families with parents who were not married, and have higher levels of poverty.

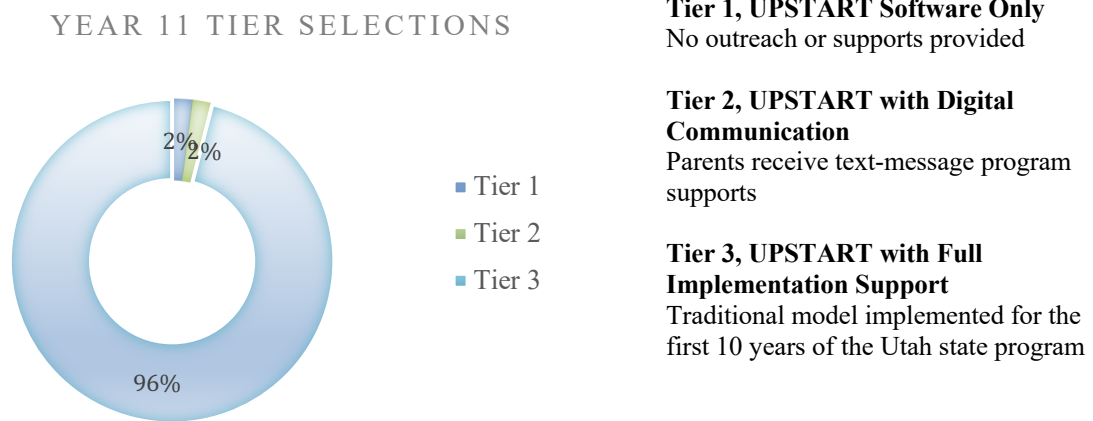Table 3. Demographic Characteristics of C11 Population

Demographic Categories		*UPSTART Graduates (N=12,073)*	*UPSTART Non-Graduates (N=3,052)*
Child's Gender	*Male*	*50%*	*50%*
	Female	*50%*	*50%*
Child's Ethnicity	*White*	*82%*	*76%*
	Hispanic	*9%*	*11%*
	Asian/Pacific Islander	*3%*	*4%*
	African American	*1%*	*3%*
	Native American	*<1%*	*<1%*
	Other	*4%*	*5%*
Child's Language	*English*	*97%*	*96%*
	Spanish	*3%*	*3%*
	Other	*<1%*	*<1%*
Parent Educational Attainment	*Some High School*	*2%*	*2%*
	High School Graduate	*8%*	*13%*
	Some College	*30%*	*35%*
	College Graduate	*43%*	*30%*
	Advanced Degree	*11%*	*8%*
Parent Marital Status	*Married*	*88%*	*77%*
	Otherwise	*12%*	*23%*
Household Poverty Level	*Below 100%*	*6%*	*12%*
	Below 185%	*30%*	*40%*
	Below 200%	*31%*	*41%*

Note: Percentages may not add to 100% due to rounding. Data is from Waterford participant records.

UPSTART Usage and Tier Selection

In addition to looking at differences in program use for those who successfully graduated compared to those who did not, the C11 evaluation also examined usage by the different UPSTART support Tiers. Parents enrolling their children in the program were asked to select the level of support that worked best for their family. All families are given the option to select one of three support Tiers.

Figure 6. Percentage of Tier Selection

YEAR 11 TIER SELECTIONS

2% 2%

96%

- Tier 1
- Tier 2
- Tier 3

Tier 1, UPSTART Software Only
No outreach or supports provided

Tier 2, UPSTART with Digital Communication
Parents receive text-message program supports

Tier 3, UPSTART with Full Implementation Support
Traditional model implemented for the first 10 years of the Utah state program

The vast majority of participants in the 2019-2020 year selected Tier 3 (n=14,535) with full implementation support. While approximately 400 families initially selected Tier 1 and Tier 2, a smaller number actually started and actively participated in the program; Tier 1 (n=299), Tier 2 (n=291). As shown in **Figure 6**, Tier 1 and Tier 2 make up approximately 4% of the sample.

In comparing the demographic make-up of the families, there were differences between those opting for Tiers 1 and 2 and those selecting Tier 3.

Table 4. Demographic Characteristics of C11 Population by Tier

Demographic Categories		Tier 1 (N=299)	Tier 2 (N=291)	Tier 3 (N=14,535)
Child's Gender	Male	51%	49%	50%
	Female	49%	51%	50%
Child's Ethnicity	White	71%	69%	81%
	Hispanic	4%	5%	10%
	Asian/Pacific Islander	2%	1%	3%
	African American	13%	16%	1%
	Native American	<1%	<1%	<1%
	Other	10%	9%	4%
Child's Language	English	100%	100%	96%
	Spanish	<1%	<1%	3%
	Other	<1%	<1%	<1%
Parent Educational Attainment	Some High School	<1%	<1%	2%
	High School Graduate	6%	5%	9%
	Some College	32%	29%	31%
	College Graduate	47%	50%	40%
	Advanced Degree	13%	13%	10%
Parent Marital Status	Married	96%	93%	85%
	Otherwise	4%	7%	15%
Household Poverty Level	Below 100%	3%	2%	8%
	Below 185%	19%	19%	33%
	Below 200%	20%	20%	33%

Note: Percentages may not add to 100% due to rounding. Data is from Waterford participant records.

Tier 3 families tend to have higher levels of poverty compared to those in Tier 1 and 2, and with the majority of the participating families selecting Tier 3, there is positive evidence that Waterford is reaching the neediest families and providing them with the highest level of program support. Tier 1 and 2, interestingly had more educated parents, higher marital rates and a greater proportion of ethnic minorities (namely African American) compared to Tier 3.

In addition to differences in demographic characteristics across Tiers, there were also clear differences for program usage. The families who received either no support or digital communication only, spent less weekly time and average fewer total hours with the UPSTART program compared to those who had full implementation support (see **Table 5**). That is, Tier 1 and 2 families spent an average of 20 minutes less per week with the program than did those in Tier 3.

Table 5. Average Total Hours and Weekly Minutes by Tier

|	Avg. Total Hours	Avg. Weekly Minutes
Tier 1	30	55
Tier 2	30	56
Tier 3	47	77

In addition to average usage differences, the trend in weekly minutes across time shows that for families with less program support, their engagement tended to decline over the life of the program. While average weekly time between all Tiers was similar in the beginning of the program, the gap widens as the year goes on. For example, the average weekly minutes spent at Week 10 of the program differed by approximately 10 minutes in favor of Tier 3 families, yet by Week 28 the difference in weekly minutes spent had more than doubled to 29 in favor of Tier 3 families. Those receiving full implementation support maintained their weekly averages following the winter holiday, while those in Tier 1 and 2 failed to rebound to the same pre-holiday levels.

Figure 7. Tier Support and Usage Over Time

AVERAGE WEEKLY MINUTES BY TIERS
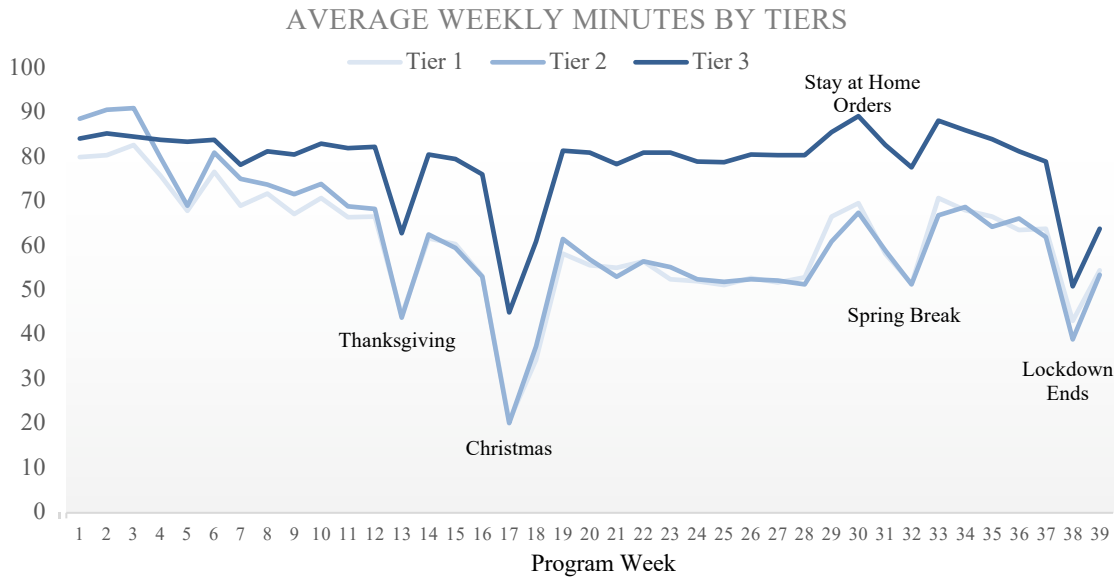
With overall lower usage across the program, those in Tiers 1 and 2 also show a significantly lower graduation rate compared to those with full support (**Figure 8**). These results suggest that providing families with the additional implementation resources and communication appear to bolster program participation and successful completion.

Figure 8. Graduation Rates by Tier

C11 GRADUATION RATE
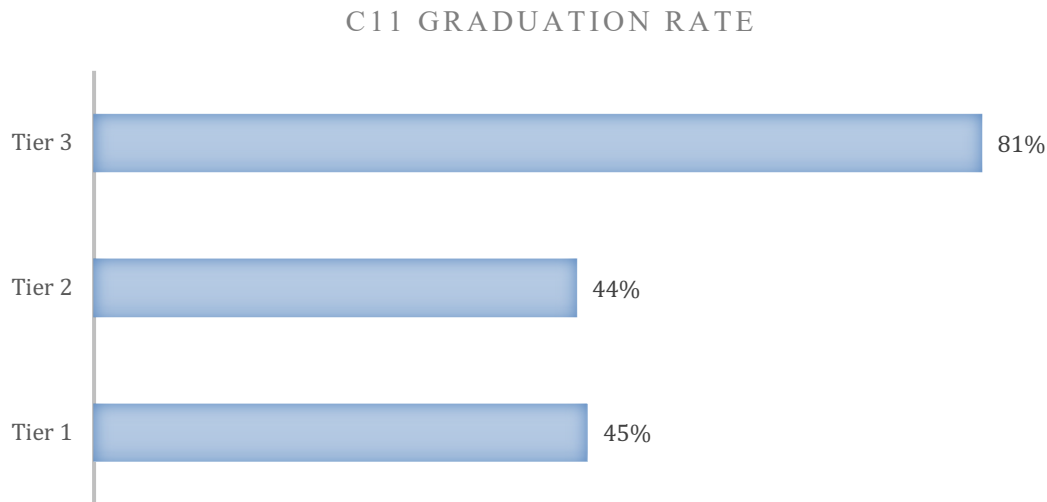
Note: Percentage based on those completing a minimum of 25 hours of instruction within each Tier

Summary & Recommendations

The Year 11 evaluation was unique for several reasons. The outbreak and spread of Covid-19 not only forced adjustments to the evaluation study, but also disrupted and altered families' and school districts' daily routines in the Spring of this program year. With a lack of impact data to include in this year's evaluation, we devoted our efforts to better understand program implementation and the influence that the Tier system had on participation and graduation rates.

The UPSTART program is well poised to address the challenges to early childhood education caused by the outbreak and spread of Covid-19. In a world where health and safety concerns prevent students from attending traditional preschools, it offers the advantage of individualized instruction in the safety of the child's own home. This benefit is contingent on student and parent engagement, a key predictor in the program's success. To be effective, UPSTART needs to demonstrate that students are using the program as intended.

During the 2019-2020 program year, 80% of all C11 program students were classified as UPSTART graduates, a dramatically lower graduation rate than seen in the previous five years. The differential program usage and graduation rates seen between the Tiers is even more extreme: less than 50% of Tier 1 and Tier 2 students graduated from the program. The usage gap between Tier 3 and Tiers 1 and 2 students was about 29 minutes per week at its widest point (i.e. Week 28).

The Cohort 11 families that did not meet usage requirements were more likely to have other indicators of risk, such as lower levels of parental education and lower household

incomes. Maintaining optimal program participation levels is important for supporting stronger literacy outcomes, particularly to benefit the most at-risk populations of learners such as low-income students (Evaluation and Training Institute, 2018).

Program Recommendations. Given the graduation trends seen in this year's evaluation, we recommend that the USBE work with the program vendor to develop strategies to increase graduation rates. This is particularly important for Tier 1 and Tier 2 program implementations.

Without the year end PEEP test scores, we cannot determine what impact Tier 1 and Tier 2 program implementations had on student achievement outcomes. It would be premature to recommend removing the Tier 1 and 2 options at this time, however, the USBE needs to be cautious about enrolling more students in these options until their impact is better understood. We recommend enrolling no more than 400 families in each of the options.

Research from previous evaluations has shown that literacy achievement was positively correlated with program use time (i.e. average weekly minutes and total minutes) and graduation status (Evaluation and Training Institute, 2018). The implementation data suggests that families without comprehensive program support (Tiers 1 & 2) had dramatically lower average weekly use, general engagement over the life of the program, and ultimately graduation rates. Tier 3, which includes full implementation support for participating families, appears to be the most optimal for influencing successful usage and completion of the program.

We recommend more thoroughly understanding the costs and benefits of a tiered approach through an implementation process evaluation that uses mixed methods research (i.e. surveys, interviews and focus groups) and collects data directly from families using the UPSTART program. This type of evaluation would be used to identify if and what advantages exist in *lower levels* of Tier support to families that cannot be determined with our current research design.

An implementation process evaluation could be used to explore the family characteristics of those in the lower Tiers as they are clearly the most at risk for insufficient participation and failed graduation rates. Areas of inquiry could be into the higher ethnic minority composition of those who participated in Tier 1 and Tier 2, how to narrow the usage gap and improve graduation rates.

The program vendor could continue to develop strategies for addressing falling usage and graduation rates among the most at-risk students (i.e. those with high levels of poverty) and target them within each Tier. Some potential action items might include:

- o Establishing peer support systems among similar groups to discuss strategies for supporting children's program use. Tier 1 and 2 families may want to make a social network to support each other vs. the full support given to Tier 3 families from the program vendor.

- o Spread information highlighting evaluation findings that links program usage and graduation with higher literacy outcomes.

- o Developing targeted incentives for families with the highest risk factors for not meeting program usage requirements, such as monthly awards, being highlighted in UPSTART communications to social networks as "Gold Star Families". These should be emphasized in Tiers 1 and 2 but could be an overall strategy for all tiers.

References

Evaluation and Training Institute. (2018, February). *Utah UPSTART program evaluation program impacts on early literacy: Year 8 Results* (Cohort 8 Technical Report). Culver City, CA: Author.

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